

PROVINCE OF ONTARIO
INITIATIVES RELATING
TO THE
NIAGARA RIVER TOXICS
COMMITTEE REPORT



Ministry
of the
Environment

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PROVINCE OF ONTARIO

RESPONSE TO THE

NIAGARA RIVER TOXICS

COMMITTEE REPORT

RECOMMENDATION	CURRENT SITUATION	PROPOSED FUTURE ACTION
* Recommendation #1 NY State - Revise permits to eliminate exceedances which could occur from cumulative effects of permitted discharges.	Not applicable - U.S. issue	Not applicable - U.S. issue.

* Recommendations are compressed. For full text of recommendations, see NRTC report.

RECOMMENDATION	CURRENT SITUATION	PROPOSED FUTURE ACTION
Recommendation #2 Assess need for: A) Secondary treatment at at sewage treatment plants (STPs) B) Pre-treatment of industrial discharges to sanitary sewers. C) Establishing flexible monitoring program under Certificates of Approval.	A) Most major plants on IJC waters have secondary treatment and are being monitored for conventional parameters. Industrial point sources are continuously being monitored for conventional parameters and reported to The International Joint Commission. B) Industrial waste discharges to sanitary sewers are controlled by the municipality through sewer use by-law. Ministry is urging pre-treatment of industrial waste discharges. C) Waste loadings and concentrations for conventional parameters are included on Certificates of Approval for sewage plants and include the type of monitoring that is necessary to determine compliance. Similar requirements are placed on industrial discharge Certificates of Approval for special cases.	A) The two existing primary sewage treatment plants will be upgraded to secondary treatment. The Niagara Falls plant secondary treatment facility upgrading was completed Sept. 3. Plans are underway to upgrade to secondary treatment the last remaining plant with primary treatment, at Fort Erie. B) A timetable has been set for industrial compliance in Niagara Falls. Regional timetables are underway. A committee has been established to upgrade the model sewer use by-law. C) Increase surveillance of municipal and industrial point sources to ensure compliance with MOE requirements. Include loadings and concentrations for additional parameters on industrial and municipal certificates of Approval. Require emitters to expand their monitoring programs.

RECOMMENDATION	CURRENT SITUATION	PROPOSED FUTURE ACTION
Recommendation #3 Where needed industries and individuals should adopt good housekeeping practices to prevent the discharge of priority pollutants. Recommendation #4 Point-source self-monitoring programs should include a Quality Control (QC) program and a lab certification process.	Normally industries practice good housekeeping to reduce cost of treatment. MOE Lab reviewing Quality Assurance, Quality Control (QA/QC) procedures for organics to develop guidelines. See also recommendation #20	Industries will be encouraged to tighten up inplant control. Those industries which pollute as a result of poor housekeeping practices will be prosecuted. Review industries presently doing self monitoring and evaluate parameters monitored. MOE Lab will have QA/QC guidelines. Data validation procedures will be available upon request from MOE.
Recommendation #5 Restore Niagara Falls New York Waste Water Treatment Plant and carbon filters and bring into design capacity operation as soon as possible.	Not applicable, U.S. issue.	Not applicable, U.S. issue.

RECOMMENDATION	CURRENT SITUATION	PROPOSED FUTURE ACTION
Recommendation #6 Once a problem (landfill) has been identified, the fastest means of affecting cleanup should be adopted.	The waste management sites identified in NRTC Report are being monitored and assessed for environmental impacts.	Abatement staff has begun an accelerated remedial program to clean up the problem sites identified in the NRTC Report within 12 months and deal with any new problems identified.
Recommendation #7 U.S. investigate landfill sites beyond 3 mile limit of Niagara River to include all of drainage basin.	Not applicable, U.S. issue.	Not applicable, U.S. issue.
Recommendation #8 Landfill site priorities must consider long-term low level effects on lake Ontario in addition to effects in immediate area.	- Investigate impacts from non-point landfill sources.	Increase monitoring and remedial actions on problem sites that may contribute to low-level contamination.
Recommendations #9 A detailed site and area investigation program should be carried out and remedial action where needed should be taken.	The Waste Management Regulation is being revised to tighten up on waste site operation/design.	Abatement staff will have all sites upgraded to meet the new Regulatory Requirements.

RECOMMENDATION	CURRENT SITUATION	PROPOSED FUTURE ACTION
Recommendation #10 Site confinement and containment of hazardous toxic substances requiring perpetual leachate removal should not be considered as a final answer to existing and future sites and therefore innovative and more effective techniques should be developed (recycling, phasing out toxics, incineration, chemical fixation, etc.)	OWMC is in the process of establishing a central site for the treatment/disposal of hazardous and toxic wastes. The Ministry of the Environment is developing new legislation, policies and guidelines intended to comply with the Blueprint on Waste Management.	Regional staff will proceed with implementing the recommendations put forward in the Blueprint on Waste Management. The installation of waste management facilities proposed by OWMC, will receive a full evaluation by the Ministry of the Environment as well as a public hearing.
Recommendation #11 More data on River sediment locations and analysis is needed. A map to show this should be produced and remedial programs evaluated.	Completion of sediment studies presently under way.	Plan co-operative programs with N.Y. State.
Recommendation #12 Additional analyses for chlorinated organics needed in water and sediments, Fort Erie and Chippawa Channel (DDT and chlorinated benzenes).	Draft report on Benthic component completed. Chlorinated organics sampled monthly in raw water at Fort Erie.	- Final report by end of 1985. - Identify exact locations of concern. - Increased monitoring.
Recommendation #13 Reduce inputs of toxics into upstream basins as called for by Great Lakes Water Quality (GLWQ) Agreement of 1978.	The control of inputs of toxic materials is part of the normal abatement program. Upper Great Lakes Channel Studies proceeding.	Increased use of control orders and approval mechanisms to reduce point source discharges.

RECOMMENDATION	CURRENT SITUATION	PROPOSED FUTURE ACTION
Recommendation #14 Carry out abatement where cause and effect has been demonstrated and then monitor to show the effects of abatement, (areas identified at present are on U.S. side).	None identified in Ontario	If found in Ontario, abatement action will be taken.
Recommendation #15 Consider monitoring Group I chemicals at point sources.	On a priority basis the more sensitive and suspected areas adjacent to complex industrial operations are monitored for toxic pollutants.	Expand point source discharge monitoring.
Recommendation #16 Review chemicals in Group I and II and consider including in ambient monitoring.	Of the 139 chemicals in Group I, IIA-IIIG, about half are done routinely.	Developing plans to analyze remaining chemicals of concern.

RECOMMENDATION	CURRENT SITUATION	PROPOSED FUTURE ACTION
Recommendation #17 Where chemicals found qualitatively should consider quantitative analyses. Recommendation #18 Characteristic data should be obtained or developed for the chemicals for which there are no data - chemicals which may have originated as process by-products. Recommendation #19 Environmental and human health criteria should be established for the many chemicals for which no criteria exist, especially where a water body is shared. Recommendation #20 Monitoring programs need quality assurance - laboratory and methodology conformity. Data limitation should be recognized.	Qualitative data often supplied from Lab. Grants given to environmental effects studies through Research Advisory Committee (RAC). MOE participates with federal as well as provincial working groups in developing environmental criteria for chemicals in water. MOE Lab recognized as world class. Monitoring programs between U.S. and Canada vary greatly in detection limits and parameters. IJC is considering some facets of QA/QC which relate to boundary waters, studies and monitoring.	Identify chemicals of concern and determine guidelines. Develop analytical methods for quantifying. New emphasis on identifying potentially hazardous by-product chemicals. - Consider all new recommended limits from other jurisdictions and evaluate for validity. - Continue own research as well as participating in inter-jurisdictional working groups. - MOE Lab detailing QA/QC procedures for organic analyses. - MOE contracts to outside consultants will contain more detailed QA/QC validation procedures. - MOE labs will detail QA/QC procedures, carry out selective audits where necessary.

RECOMMENDATION	CURRENT SITUATION	PROPOSED FUTURE ACTION
Recommendation #21 All data should be on a central data system for U.S. and Canada boundary waters.	MOE is improving electronic data storage systems.	MOE is working on compatible systems for data sharing.
Recommendation #22 A Bi-National committee be set up to co-ordinate implementation of recommendations.	Other than IJC, there is the interaction between the MOE Niagara River Team and New York DEC. On the national level, a committee is still only under consideration.	Continue to support federal efforts to establish Bi-National committee.
Recommendation #23 Develop toxic waste load allocation plan for the Niagara River based on mass balance concept.	U.S. agencies in disagreement at this time, want to evaluate other inputs of toxics into Lake Ontario.	Continue to press allocation plan.
Recommendation #24 Update GLWQ Agreement to include chemicals of concern and make objectives more stringent and eventually to approach the zero discharge philosophy.	Disagreement from U.S. agencies.	Emphasize zero discharge philosophy for future GLWQ Agreements under IJC.

PROVINCE OF ONTARIO

ACTION PLAN

FOR THE RECOMMENDATIONS

OF THE

NIAGARA RIVER TOXICS

COMMITTEE REPORT

September 16, 1985

INITIAL ONTARIO PROGRAM RELATED TO NRTC REPORT

The ultimate objective of the NRTC Report's recommendations is to virtually eliminate all toxic contaminants discharges and loadings to the Niagara River and monitor the success of the efforts taken. On Ontario's part, it will mean a commitment to take some new and enhanced initiatives.

In addition to commitments to regular programs, the Ontario Ministry of the Environment is expected to spend approximately \$1,000,000 in the next 12 months in programs which respond to the Niagara River Toxic Committee report. Of this expenditure, about \$380,000 will be analytical expenses associated with enhanced point source and water quality monitoring programs and about \$500,000 will be spent for fully dedicated staff time, engineering, legal services and other consulting fees. These activities and expenditures would be spent to address environmental issues and carry out studies on both sides of the Niagara River.

A. Point Sources - Ontario

1. Continue to monitor and evaluate toxic inputs in Niagara River Basin by using data obtained since the NRTC Report for all point source discharges and identify which discharges require further attention and control.

(Enhancement)

2. Where required, implement abatement requirements for industries/municipalities which discharge toxics and monitor for compliance.

(Ongoing)

3. After the above evaluation, refine sampling program to be discharged specific.

(Enhancement)

4. Continue point source sampling in 1985/86 to confirm parameters and concentrations and where required, implement or modify self monitoring program.

(Enhancement)

5. Enhance reporting requirements of industries/municipalities to MOE - review submissions and enforce compliance where necessary. Continue point source monitoring (cross-check self monitoring).

(Enhancement)

Costs for "A": Analytical - \$200,000
 Professional - \$ 43,000

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B. Waste Reduction, Pretreatment and Good Housekeeping - Ontario

1. Direct municipalities to adopt stringent sewer use bylaws and recommended pretreatment where necessary.

(Ongoing but enhanced)

2. Promote through education and seminars industrial waste reduction/elimination programs through co-operation with Municipal/Regional Governments, Chambers of Commerce and industries.

(Enhancement, no costs assigned)

3. Continue to emphasize good housekeeping, industries, municipalities and public.

(Ongoing)

Industrial Strategy - Ontario

1. Proceed with development of industrial strategy program.

(Ongoing but enhanced not extra costs assigned for "B".)

C. Canadian Long Term Monitoring (Enhanced Ongoing Program)

1. Monitor river water and suspended sediment inflow at Lake Erie and downstream at Niagara-on-the-Lake (Environment Canada monitoring stations established).
2. Continue contaminants monitoring and sport fish program (ongoing).
3. ~~Bio-monitoring - spottail shiners, cladophora and clams.~~
Establish background water quality stations and continue existing biomonitoring locations (ongoing but parts of program enhanced in response to NRTC Report).
4. Monthly monitoring of raw and treated drinking water (ongoing since 1978) at Fort Erie, Niagara Falls (Ontario) and of river water at Niagara-on-the-Lake. (The new Drinking Water Surveillance Program could incorporate this special monitoring).

Costs for "C": Analytical - \$150,000
Professional - \$ 75,000

September 16, 1985

D. Non-Point Source (Landfills) - Ontario

1. Finalize landfill site evaluation, review, continue to monitor test wells (Cyanamid Welland and Niagara Falls, Atlas Steels, Fort Erie Municipal and CN Rail Niagara Falls) and develop follow-up actions where needed.
2. Monitor any required follow-up actions by owners at landfills.
3. Re-evaluate landfills as monitoring results are reviewed.

Costs for "D": Analytical - \$30,000
Professional - \$25,000

E. Analytical Data on Water Chemistry

1. Ministry Laboratory staff will develop Quality Assurance, Quality Control (QA/QC) protocols and methodologies for organics where a need has been identified.
2. Priorities and laboratory organization restructured to place needed emphasis on toxic organics.
3. GC/MS analytical equipment has been acquired which is capable of routinely analysing those compounds of concern identified in the NRTC Report.
4. MOE is working with other agencies on guidelines and standards where none are presently available.
5. Data storage system continually being revised and improved.
6. Support interagency enhancement of data storage and access.

(No costs assigned for "E". Ongoing program but enhanced due to NRTC).

F. Waste Load Reduction-New York State (Niagara River Improvement Team)

Ensure ongoing toxic waste load reduction from New York discharges to the Niagara River:

1. Continue to review State Pollution Discharge Elimination System (SPDES) permits to ensure stringent discharge limits.
2. Review and evaluate "discharge monitoring reports," (DMR's) submitted by SPDES permit holders to DEC to ensure permit compliance.
3. When necessary, intervene in courts, request hearings or take part in hearings where discharges or actions are deemed to be unacceptable, (e.g., Niagara Falls Wastewater Treatment Plant and S-Area).

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4. Take part in sharing of water samples with U.S. authorities when invited to do a comparative analysis relating to a problem site or a contaminated discharge to the Niagara.

(Ongoing program since 1982).

Costs for "F": Consultants, Engineering Dedicated
Staff and Legal costs - \$358,000.

STATUS SUMMARY

ONTARIO

SITES AND DISCHARGERS

IDENTIFIED BY THE

NIAGARA RIVER TOXICS

COMMITTEE REPORT

September 16, 1985

CYANAMID, NIAGARA PLANT

- Identified as source of organics, zinc and cyanide.

BACKGROUND:

- Company makes calcium carbide, calcium cyanide, calcium cyanamide and liquid nitrogen.
- NRTC report showed Butylbenzyl Phthalate (0.35 kg/d), Di-n-octyl Phthalate (0.35 kg/d), zinc (0.6 kg/d) and cyanide (0.96 kg/d) detected in the cooling water discharge.
- This company does not have process water discharges.

STATUS:

- Company has made process changes to eliminate zinc (confirmed by recent sampling) and to reduce cyanide discharges.
- Company monitors cyanide monthly, levels consistently below detection (.02 mg/l).
- Neither MOE or company can find any source of organics found by NRTC.

September 16, 1985

CYANAMID, NIAGARA FALLS

- Waste Storage Area

BACKGROUND:

- Wastes were stored on the ground at this location while the Queenston-Chippawa Canal was being built, interrupting the access to the St. David site.
- Property owned by Ontario Hydro.
- At Ontario Hydro's request, approximately 32,000 tonnes of the material was removed to Cyanamid Welland site.
- In 1982 the site was investigated as part of an MOE-NR Team landfill site review.
- Although most waste was removed, some material still in topographic depressions was identified during the investigation.
- No seepages were located during NR Team site visits.
- Waste stored on site included carbon, slaked lime and calcium carbide and lime, coal, coke and calcium oxide.
- Site listed in NRTC report based on consideration of the waste stored on site, which could potentially generate leachate containing cyanide and because of the site's proximity to the power canal and Gorge.

STATUS:

- Because wastes of concern were found at the site MOE has conducted a study.
- Hydrogeological Report due September, 1985.
- The study:
 - examined the spatial extent of the waste;
 - identified the potential for groundwater and surface water contamination.
- Further abatement program to be developed upon receipt of consultant's final report, expected soon.

September 16, 1985

CYANAMID, WELLAND

- On-Site Waste Disposal

BACKGROUND:

- Two licensed disposal sites located in two areas:
 - West Dump Site - 3 hectare site is approved to receive 1000 tonnes per year of 100% non-hazardous waste.
 - Brown Road Dump - Approved to receive 1,800 tonnes per year of 100% non-hazardous waste.
- 97 hectares of lagoons approved under OWR Act.
 - Ten of 11 cells are closed and capped.
 - Waste is placed as a slurry in bermed cells.
- Preliminary hydrogeological investigations completed in December 1981 identified that:
 - Groundwater quality in bedrock unaffected, protected by thick clay deposits.
 - Some elevated levels of sulphate and hardness in surface water discharge.
 - Elevated levels not considered a threat to environment.
- MOE monitors shallow groundwater, ditches and Miller's Creek.
- MOE/NRTC studies identified the potential for contamination of surface water which flows to Welland River.
- Some elevated nitrate (26.4 mg/l) in near surface fractured clay groundwater adjacent to the cells.
- Site listed in NRTC report due to concern for leachate entering surface drainage and shallow groundwater.
- In 1983 Cyanamid modified drainage to contain seepages from lagoon.
- Cyanamid pleaded guilty to charges of operating a waste disposal site without a Certificate of Approval (Section 39) and was convicted in 1984 and fined \$7,500.

STATUS:

- As a result of the litigation, Cyanamid hired a consultant to extensively investigate the entire Welland plant site hydrology and hydrogeology.
- First phase of program completed December, 1984, established the groundwater flow system and determined the monitoring program for Phase 2.
- Phase 2 being undertaken in 1985 with final report expected summer, 1986.
- Study may form the basis of a remedial action plan.

September 16, 1985

CN RAIL, NIAGARA FALLS YARD

- Landfill Site listed in NRTC report due to proximity to Niagara River.

BACKGROUND:

- Site a Federal responsibility.
- Seven hectare site operated 1962-1978.
- Used for disposal of construction and domestic waste, scrap metal clean out waste from rail cars and some oil and machine shop waste.
- Closed due to problems with fire.
- Covered with waste rock.
- Intermittent surface drainage is iron stained as well as elevated conductivity.
- 1983 federal study concluded that:
 - Only small fraction of waste (e.g. oil film on metal filings) of medium concern.
 - Potential for impact scores high due to proximity to recreational and residential lands.
 - Site close to whirlpool where "Pacific Salmon and Rainbow Trout congregate during fall migration".
 - Site rated as "priority 2", i.e. it will be assessed in the future rather than immediately as in priority 1.
- Chemical analysis by MOE of surface water sampled December, 1982 indicated copper, nickel and lead marginally over Ontario water quality objectives, no pesticides, trace of volatile organics.

STATUS:

- Federal Government has engaged a consultant and a site evaluation is being carried out.
- MOE data sent to CNR.
- Site closure should follow federal guidelines including 1 metre thick clay cap.
- MOE to monitor and to promote capping.

September 16, 1985

CITY OF WELLAND

- McMaster Sewer identified as point source of organics and heavy metals.

BACKGROUND:

- NRTC report identifies 0.5 kg/d of organics, 12.8 kg/d of heavy metals.
- City own and maintain the sewer.
- Estimated 2 to 6 MGD of combined sewage discharges to Welland River.
- Consists mostly of process water and cooling water from industries.
- Sewer separation program undertaken and continuing.

STATUS:

- City continuing with sewer separation program.
- City contacting industries to promote on-site separations.
- MOE has requested abatement program from City Council.
- One of major industrial contributors (Wabasso) closed.
- MOE surveying industries on sewer to update quality and quantities as well as sampling the sewer discharge. Information may form the basis of Order requiring City to connect sewer to STP.

September 16, 1985

TOWN OF FORT ERIE

- Anger Road Water Pollution Control Plant identified as point source of organics and heavy metals.

BACKGROUND:

- Constructed in 1964, expanded in 1979 to 3.3 mgd.
- Primary treatment with phosphorus removal with effluent discharged to Niagara River.
- NRTC report identifies 5.0 kg/d of organics, 1.8 kg/d metals.
- 1983 average daily flow 2.8 mgd, effluent BOD 25, suspended solids 20, total phosphorus .9.

STATUS:

- Region of Niagara has engaged a consultant to conduct an engineering feasibility study on expansion of the plant capacity and secondary treatment; target date for plant expansion is 1990.
- Continue routine inspection and monitoring
- An industrial pre-treatment program and improved spill control and housekeeping is being implemented by the Region of Niagara.

September 16, 1985

ATLAS STEEL

- Identified as significant source of total EPA pollutants.

BACKGROUND:

- Company makes specialty and stainless steel in electric arc furnaces.
- Company was identified as largest Ontario source of total EPA priority pollutants at 74 kg/d (primarily heavy metals at 70.2 kg/d).
- Two organics, i.e. Di-n-Butyl Phthalate (.38 kg/d) and Trichloroethylene (3 kg/d) exceed NRTC cut off level of 0.227 kg/d.
- Effluent controls consist of north and south filtration plants with recycling, oil water separators and a solidification plant for acid/alkaline wastes.
- Control Order requiring above items expired September 30, 1983.
- Reduction of approximately 85% (60 kg/day) in heavy metals achieved.
- The most significant contributors to this loading were chromium and nickel.

STATUS:

- Recent analyses show satisfactory control of heavy metals which meet MOE objectives but still exceed NRTC cutoff.
- Chromium and nickel concentrations have been reduced to 0.11 mg/l and 0.07 mg/l respectively.
- Continued monitoring to ensure compliance with MOE requirements.
- Investigate sources of organics and negotiate control by good housekeeping and maintenance.

September 16, 1985

FLEET INDUSTRIES

- Identified as source of chromium.

BACKGROUND:

- Company makes various airplane and sonar components.
- Discharge contains 1.1 kg/d chromium which is above both MOE objective and NRTC cutoff level (.454 kg/d).
- Discharges to Frenchman's Creek include metal preparation rinse waters, cooling waters from heat treating, sanitary effluent and water from spray paint booths.
- A plant expansion in 1981 included a physical chemical wastewater treatment system for new metal preparation facilities.
- MOE survey resulted in relocation of the old metal preparation area closer to the existing effluent treatment facility.

STATUS:

- Voluntary program to treat remaining effluent sources in expanded treatment facility has been implemented.
- Recent sample indicates chromium below NRTC cutoff loading.
- Additional data being obtained to assess degree of compliance.

September 16, 1985

NIAGARA FALLS WATER POLLUTION CONTROL PLANT

- Point source of organics, heavy metals and cyanides.

BACKGROUND:

- 12.8 mgd primary plant with phosphorus removal.
- NRTC report identifies 6.1 kg/d organics and 17.5 kg/d heavy metals and cyanide.
- 1983 average daily flow 12.4 mgd, effluent BOD 50, suspended solids 22, phosphorus 1.
- Effluent discharged to Niagara River via Hydro Power Canal.

STATUS:

- Construction of secondary treatment process (15 mgd) completed.
- MOE contribution of \$3.5 million out of \$11.5 million.
- Official opening of expanded facility occurred on September 3, 1985.
- Effluent quality will improve with completion of secondary treatment late 1985.
- The Region of Niagara has established an industrial pre-treatment program for implementation by 1990.
- Continue routine inspection and monitoring to ensure compliance.

September 16, 1985

WELLAND WATER POLLUTION CONTROL PLANT

- Identified as point source of heavy metals.

BACKGROUND:

- 10 mgd secondary treatment plant with phosphorus removal installed in 1972.
- NRTC report identifies 17.1 kg/d heavy metals including 13 kg/d of lead.
- 1983 average flows 9.2 mgd, BOD 11, suspended solids 10, total phosphorus .6, discharging to Welland River.
- Aeration, secondary clarifier and chlorine contact chamber expanded to 15.2 mgd in 1983.

STATUS:

- Regional Municipality of Niagara applied to the Ministry for re-rating the plant to 15.2 mgd. Application turned down and Region has commissioned a full-scale study by a consultant for expansion.
- Continue routine inspection and monitoring
- MOE staff are surveying the plant operation in order to properly assess plans for expansion.

September 16, 1985

CYANAMID, WELLAND PLANT

- Identified as source of chromium and cyanide.

BACKGROUND:

- Company manufactures nitrogenous fertilizer.
- Identified in NRTC report as source of 9.9 kg/d heavy metals (primarily chromium) and 2.3 kg/d cyanide.
- Extensive Section 126 survey resulted in Control Order issued in 1977. An amendment to Order was issued September 30, 1984 giving 6 more months to reduce toxicity and achieve effluent quality, specifically ammonia.
- Controls installed under Order include chromium removal, ion exchange neutralization units, scrubbers, filtration units and a containment system.
- Total abatement costs were in excess of \$26 million.

STATUS:

- Recent sampling indicates chromium at 0.12 mg/l.
- Company has also eliminated a cooling water discharge which was a source of chromium.
- Only source of cyanide discharge has been eliminated. Recent sampling shows cyanide to be below 0.02 mg/l.

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